

IN THE SUBSTITUTE SPECIFICATION:

Page 13, line 13, change "5" to -26-; and

line 20, change "5" to -26-.

IN THE CLAIMS:

Please cancel claims 21 and 29-50 without prejudice or disclaimer; amend claims 51-54; and add new claims 55-67, as follows:

51. (Amended) In an asymmetric network communication system including a host server, a plurality of remote clients and a headend facility for distributing information signals to said remote clients, a packet delivery system comprising:

a downstream channel [that is] shared by said plurality of remote clients for receiving high speed data packets from said host server over a shared medium,

an upstream channel shared by said remote clients that enables at least one of said remote clients to transmit lower speed return data packets to said host server,

a hybrid access system including a network manager for controlling transfers of data packets from said host server to said remote clients over said shared medium in accordance with a downstream channel protocol and for controlling transfers of lower return data packets from the at least one [a] remote client to said host server over said shared upstream channel in accordance with an upstream channel protocol,

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said hybrid access system including a backbone interface that enables connection with said host server, a downstream router for enabling transmission of high speed data packets to said remote clients over said shared medium and an upstream router for receiving return data packets from said at least one of said remote clients, and

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said hybrid access system further including a credit manager for issuing credit control packets indicative of respective volumes of data said remote clients are respectively authorized to send, wherein said remote clients respectively return updated messages to said network manager indicative of respective remaining volumes of data to be sent to said host server.

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52. (Amended) In combination with a television broadcast facility including a shared medium downstream channel [that is] shared by a plurality of network devices that receive high speed data packets from a host server, an [the] improvement comprising:

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respective interfaces associated with said network [remote] devices [that are] connected with said shared medium and tuned to receive high speed transfers of data packets for conveyance to said network devices [remote clients],

5
an upstream channel [that is] shared by said network [client] devices to enable conveyance of lower speed return data packets to said host server,

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a network manager for controlling transfers of information data packets from said host server to said network devices [remote clients] over said shared medium in accordance with a downstream channel protocol and transfers of return data packets from said network devices

[remote clients] to said host server over said upstream channel in accordance with an upstream channel protocol,

wherein said network manager issues credit control packets indicative of a volume of data which at least one of said network devices is authorized to send wherein said at least one of said network devices effects updates said credit control packets [packet] to indicate an authorized volume of data less a volume of data sent by said at least one of said network devices.

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53. (Amended) In an asymmetric wide area network that includes a network manager, a host server and a plurality of remote clients, a method of communicating with remote clients including the steps of:

providing an upstream channel that shared by said remote clients and that enables at least one of said remote clients to transmit return data packets to said host server,

transmitting a credit signal to a remote client to authorize a volume of data said at least one of said remote clients [remote client] is authorized to send,

effecting updating of said credit signal so that the credit signal corresponds to said [authorized] volume of data less data sent by said at least one of said remote clients [remote client], and

returning said [updated] credit signal to said network manager.

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54. (Amended) A wireless packet delivery system for use in a communication network that establishes a communications link between a host server and at least one remote device, said system comprising:

a downstream channel [that is] shared by said at least one remote device for receiving data packets from said host server over a shared [over a shared] medium,
an [at least one] upstream channel that enables said at least one remote device to transmit return data to said host server,
a network manager for handling transfers of data packets between said host server and said at least one remote device over said shared medium in accordance with upstream and downstream channel protocols, and for issuing a credit signal for said at least one remote device [devices] corresponding to a volume of data said at least one remote device [client] is authorized to send.

Please add new claims 55-67 as follows:

5 -55. In a two way network communication system, a method of administering transfers of information between a plurality of first communication nodes, and a second communication node, based on credit administration, comprising:

issuing a credit for a one of the first nodes, to enable a transfer of a set amount of information from the one of the first nodes;

receiving at the second node an amount of information corresponding in value up to the credit issued for the one of the first nodes;

sending a message to the second node indicative of the amount of information remaining to be sent;

polling multiple ones of the plurality of first nodes from the second node to determine which of the first nodes requests an information transfer; and

bypassing polling of respective ones of the first nodes that have unused information transfer credits.

56. In a two way network communication system, a method of administering transfers of information between first and second communication nodes, based on credit administration, comprising:

issuing a credit for the first node, to enable a transfer of a set amount of information from the first node;

receiving at the second node an amount of information corresponding in value up to the credit issued for the first node;

sending a message to the second node indicative of the amount of information remaining to be sent; and

returning the credit to the second node when the first node has no information to transfer.

57. In a two way network communication system, a method of administering transfers of information between a plurality of first communication nodes, and a second communication node, based on credit administration, comprising:

issuing a credit for dedicated channel use by a one of the first nodes that has been waiting the longest to transfer information, to enable a transfer of a set amount of information from the one of the first nodes;

receiving at the second node an amount of information corresponding in value up to the credit issued for the one of the first nodes; and

sending a message to the second node indicative of the amount of information remaining to be sent.

58. In a network communication system including a server that transfers information with a plurality of remote devices via respective upstream and downstream channels, an improvement comprising:

a network controller that issues respective credit control packets associated with the remote devices, the packets including credit signals corresponding to a volume of data the remote devices are respectively authorized to send, the credit signals being updated upon transfers of information to indicate respective authorized volumes of data less respective transferred volumes of data, monitors respective statuses of the remote devices and transitions respective ones of the

remote devices to a non-responsive state when the controller does not receive responses to the credit control packets.

59. In a network communication system including a server that transfers information with a plurality of remote devices via respective upstream and downstream channels, the improvement comprising:

a network controller that issues respective credit control packets associated with the remote devices, the packets including credit signals corresponding to a volume of data the remote devices are respectively authorized to send, the credit signals being updated upon transfers of information to indicate respective authorized volumes of data less respective transferred volumes of data, wherein the network controller couples the physical layer of each of the upstream and downstream channels,

wherein the downstream channel comprises a shared medium shared by the remote devices, and the upstream and downstream channels form an asymmetric network connection between the host and the remote devices, wherein the downstream channel is selected from one of a CATV network, a direct broadcast satellite network, and an over-the-air radio frequency transmission, and the upstream channel is selected from one of the CATV network and the over-the-air radio frequency transmission.

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60. In a system including a server, a plurality of remote clients and an information distribution facility for distributing data packets to the remote clients, a two-way network communication system comprising:

 a downstream channel shared by the plurality of remote clients to receive high speed data packets from the server;

 an upstream channel for enabling at least one of the remote clients to convey lower speed return data packets to the server; and

 a network manager for managing transfers of data packets from the server to the remote clients in accordance with a downstream channel protocol and transfers of return data packets from the remote clients to the server in accordance with an upstream channel protocol, and for issuing credit control packets indicative of respective volumes of data the remote clients are respectively authorized to send, the remote clients respectively returning updated messages to the network manager indicative of respective remaining volumes of data to be sent to the server, wherein the upstream channel and the downstream channel reside in different communication media.

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61. In a system including a server, a hybrid fiber coaxial cable network, a plurality of remote clients physically connected in parallel to the hybrid fiber coaxial cable network, and an information distribution facility for distributing data packets to the remote clients, a two-way network communication system comprising:

a downstream channel shared by the plurality of remote clients to receive high speed data packets from the server, the downstream channel lying in the hybrid fiber coaxial cable network such that the remote clients may receive simultaneously broadcast data packets, whereby to facilitate efficient sharing of resources at the distribution facility by the remote clients; an upstream channel for enabling at least one of the remote clients to convey lower speed return data packets to the server; and

a network manager for managing transfers of data packets from the server to the remote clients in accordance with a downstream channel protocol and transfers of return data packets from the remote clients to the server in accordance with an upstream channel protocol, and for issuing credit control packets indicative of respective volumes of data the remote clients are respectively authorized to send, the remote clients respectively returning updated messages to the network manager indicative of respective remaining volumes of data to be sent to the server.

9. The network communication system as recited in claim 8 wherein the upstream channel comprises a lower speed channel carried by the hybrid fiber coaxial cable network.

10. In a system including a server, a plurality of remote clients including a radio frequency receivers, and an information distribution facility for distributing data packets to the remote clients, the distribution facility including a cellular broadcast facility, a two-way network communication system comprising:

a downstream channel shared by the plurality of remote clients to receive high speed data packets from the server, the downstream channel including radio frequency broadcasts from the cellular broadcast facility, to allow the radio receivers to receive data packets;

an upstream channel for enabling at least one of the remote clients to convey lower speed return data packets to the server; and

a network manager for managing transfers of data packets from the server to the remote clients in accordance with a downstream channel protocol and transfers of return data packets from the remote clients to the server in accordance with an upstream channel protocol, and for issuing credit control packets indicative of respective volumes of data the remote clients are respectively authorized to send, the remote clients respectively returning updated messages to the network manager indicative of respective remaining volumes of data to be sent to the server.

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64. In a system including a server, a plurality of remote clients and an information distribution facility for distributing data packets to the remote clients, a two-way network communication system comprising:

a downstream channel shared by the plurality of remote clients to receive high speed data packets from the server;

an upstream channel for enabling at least one of the remote clients to convey lower speed return data packets to the server, the upstream channel including a lower speed cellular return channel routed through the distribution facility; and

a network manager for managing transfers of data packets from the server to the remote clients in accordance with a downstream channel protocol and transfers of return data packets from the remote clients to the server in accordance with an upstream channel protocol, and for issuing credit control packets indicative of respective volumes of data the remote clients are respectively authorized to send, the remote clients respectively returning updated messages to the network manager indicative of respective remaining volumes of data to be sent to the server.

12. In a system including a server, a plurality of remote clients each including a receiver, and an information distribution facility for distributing data packets to the remote clients, the distribution facility including a direct broadcast satellite, a two-way network communication system comprising:

a downstream channel shared by the plurality of remote clients to receive high speed data packets from the server, the downstream channel including electromagnetic transmissions from the direct broadcast satellite to allow the receiver in each remote client to receive information signals;

an upstream channel for enabling at least one of the remote clients to convey lower speed return data packets to the server; and

a network manager for managing transfers of data packets from the server to the remote clients in accordance with a downstream channel protocol and transfers of return data packets

from the remote clients to the server in accordance with an upstream channel protocol, and for issuing credit control packets indicative of respective volumes of data the remote clients are respectively authorized to send, the remote clients respectively returning updated messages to the network manager indicative of respective remaining volumes of data to be sent to the server.

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66. In a system including a server, a plurality of remote clients and an information distribution facility for distributing data packets to the remote clients, a two-way network communication system comprising:

a downstream channel shared by the plurality of remote clients to receive high speed data packets from the server;

an upstream channel for enabling at least one of the remote clients to convey lower speed return data packets to the server; and

a network manager for managing transfers of data packets from the server to the remote clients in accordance with a downstream channel protocol and transfers of return data packets from the remote clients to the server in accordance with an upstream channel protocol, and for issuing credit control packets indicative of respective volumes of data the remote clients are respectively authorized to send, the remote clients respectively returning updated messages to the network manager indicative of respective remaining volumes of data to be sent to the server, wherein each of the upstream and downstream channels lies in a communication medium selected from one of a CATV distribution network, a cell site, an electromagnetic transmission, a

hybrid fiber coaxial cable network, an over-the-air wireless network, and a direct broadcast satellite communication network.

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87. In a system including a server, a plurality of remote clients and an information distribution facility for distributing data packets to the remote clients, a two-way network communication system comprising:

a downstream channel shared by the plurality of remote clients to receive high speed data packets from the server;

a plurality of upstream channels for enabling at least one of the remote clients to convey lower speed return data packets to the server; and

a network manager for managing transfers of data packets from the server to the remote clients in accordance with a downstream channel protocol and transfers of return data packets from the remote clients to the server in accordance with an upstream channel protocol, the upstream channel protocol enabling operation of the upstream channels at multiple speeds, wherein the network manager selectively assigns an upstream channel having a speed according to an information transfer requirement of one of the remote clients to provide more effective utilization of channel bandwidth according to demand by respective remote clients and for issuing credit control packets indicative of respective volumes of data the remote clients are respectively authorized to send, the remote clients respectively returning updated messages to the network manager indicative of respective remaining volumes of data to be sent to the server.--
